

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Application No.: 10/538,857

Attorney Docket No.: Q88608

AMENDMENTS TO THE DRAWINGS

Replacement Drawings (Figures 1 and 5)

Attachment: Replacement Sheets

REMARKS

Claims 1-47 and 123 are all the claims pending in the application. Claims 1-13, 17-47 and 123 are rejected. Claims 14-16 are withdrawn from consideration. Claims 1, 4, 7, 8, 13-17 and 30 are amended. Claims 5, 6, 26 and 35 are cancelled.

Support for Amendment

Independent claim 1 has been amended by the inclusion of the wording from existing claims 5 and 6, and by the reversal of the amendments (both additions and deletions) made in response to the previous office action.

The amended set of claims also includes the amendment and cancellation of some of the sub-claims in reply to the clarity objections/rejections. Claim 30 is amended to correct improper dependency.

Election/Restriction

In order to afford Applicant the benefit of compact prosecution, claims 2-4, 6-13, 22-47 and 123 are examined with the elected invention including generic claims 1 and 5. Claims 14-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a non-elected invention.

Applicants accept the Examiner's approach to dealing with the restriction/election issue and will proceed with prosecution of the identified elected claims.

Formalities

The Examiner notes that the amendment to the claims filed on 3-11-09 does not comply with the requirements of 37 CFR 1.121(c), at least because the text of the claim 1, lines 5-6, deleted matter "first and second regions of the" is not shown by proper notation.

Applicants greatly appreciate the Examiner's acceptance of the response as bona fide, the Examiner's waiver of the error and the expedited prosecution of the present application in order to continue to afford applicant the benefit of compact prosecution.

Drawings

Objections Under 37 CFR 1.83(a)

The drawings are objected to under 37 CFR 1.83(a) because they do not show every feature of the invention specified in the claims. Specifically, the Examiner asserts that in claim 1, there is no teaching "so as to confine in a single step the deposition of said conductive or semiconductive material to said first and second regions." As to claim 6, the Examiner finds that there is no illustration of "a channel." Finally, for claim 35, the Examiner finds no illustration for "both the semiconductor layer and the dielectric layer are patterned so as to form an active layer island of the device."

In response Applicants note as follows. First, for claim 1, the wording in question has now been removed from amended claim 1. Second, for claim 6, Applicant respectfully submits that Figure 1 shows a ridge (labelled 5) which defines a channel in between the electrodes (labelled 9 and 10) in a semiconductor material (labelled 11), and that Figure 1 illustrates an embodiment of the invention as claimed in claim 1 of the attached amended set of claims. As to claim 35, this claim has been cancelled, rendering the objection moot.

Objections Under 37 CFR 1.84(p)(5)

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the reference character 43, which is not mentioned in the description.

In response, Applicants are submitting a new replacement Figure 5, in which numeral 43 is added.

Objections Under 35 USC 132

The Examiner objects to the amendment filed 3-11-09 under 35 U.S.C. 132(a) because the Examiner believes that it introduces new matter into the disclosure. The Examiner asserts that “there is no original disclosure of the particular structure shown in new Figure 1(G).”

Figure 1(G) was added in reply to the objection in the previous Office Action against the absence of any drawing showing the feature of claim 35.

While Applicants disagree with the Examiner’s conclusions, with the aim of expediting the prosecution of this application, Applicants have now (1) replaced existing Figure 1 with original Figure 1., (2) reversed the inclusion in the description of the mention of Figure 1G at page 7 of the specification, and (3) cancelled claim 35, for which Figure 1G was previously added.

Claim Rejections - 35 USC 112

Claims 1-13, 17-47 and 123 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite. This rejection is traversed for at least the following reasons.

First, as to claims 5, 6, 26 and 35, the rejection is moot in view of the cancellation of these claims.

Second, the Examiner finds a lack of antecedent basis in claim 13 for “a high surface energy as the substrate.” The claim has been amended.

Third, the Examiner finds the scope of claims 1, 4, 13 and 26 to be unclear. Applicants have amended these claims as follows:

Claim 1: This claim has been amended to remove the objected-to wording “so as to confine in a single step the deposition of said conductive or semiconductive material to said first and second regions”.

Claim 4: This claim has been amended to deal with what Applicants understand to be the Examiner's reason for finding this claim to be unclear.

Claim 26: This claim is now cancelled.

Claims 1-13, 17-47 and 123 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. This rejection is traversed for at least the following reasons.

First, as to claims 5, 6, 26 and 35, the rejection is moot in view of the cancellation of these claims.

Second, the Examiner asserts that claim 1 contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention, specifically, the language "so as to confine in a single step the deposition of said conductive or semiconductive material to said first and second regions." Also, the Examiner considers the language, "in a single step" to be an improper negative limitation which excludes additional steps.

The language that forms the basis for the rejection has been deleted.

Third, the Examiner states that claims 13 and 26 have not been rejected over the prior art "because, in view of the 35 U.S.C. 112 rejections, there is a great deal of confusion and uncertainty as to the proper interpretation of the limitations of the claim(s); hence, it would not be proper to reject the claim(s) on the basis of prior art."

Applicants disagree and submit that compact prosecution would be better served by identifying prior art that is relevant to the claims.

Moreover, as to claim 13, the new language should make the scope of the claim clear.

Finally, as to claim 26, the rejection is moot in view of the cancellation of the claim.

Claim Rejections - 35 USC 102

Claims 1, 2, 6-8, 11, 27, 30, 31, 36-38, 40, 43-47 and 123 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Bernds (W00247183). This rejection is traversed for at least the following reasons.

First, as to claim 6, the rejection is moot in view of the cancellation of the claim.

Amended Claim 1

Second, as to claim 1, the claim is amended to distinguish over the prior art by reciting the unique combination of three steps for forming an electronic device having a multilayer structure, including:

(1) embossing a surface of a substrate so as to depress first and second regions of the substrate relative to at least a third region of the substrate;

(2) treating the surface of the substrate with a surface modification process that has a different effect on depressed regions of the substrate relative to non-depressed regions of the substrate, whereby the non-depressed regions and the depressed regions are given different surface energies, such that the deposition of a material is defined by the surface energy of the substrate in the first and second regions, and

(3) depositing conductive or semiconductive material from solution onto the first and second regions of the substrate so as to form a first electrode on the first region and a second electrode on the second region, wherein the first and second electrodes are electrically insulated from each other by the third region; and wherein the third region is a ridge wherein the ridge has a width that defines a length of a channel of the electronic device.

These steps include the features of claim 5, which was not rejected as being anticipated by Bernds. Thus, the claim cannot be anticipated.

Claims 2, 7, 8, 11, 27, 30, 31, 36-38, 40, 43-47 and 123

Third, these claims would not be anticipated because of their dependence from amended claim 1, which has been demonstrated to be novel and patentable.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernds as applied to claim 2, and further in combination with Heidari (W00190816). This rejection is traversed for at least the following reasons.

Again, claim 1 includes the limitations of claim 5, which was not rejected on the basis of Bernds in combination with Heidari. Thus, both claims 3 and 4, which now depend from amended claim 1, would be patentable over the cited combination of prior art.

Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernds as applied to claim 1, and further in combination with Ostergard (20030230747). This rejection is traversed for at least the following reasons.

Amended Claim 1

The Examiner admits that Bernds does not appear to explicitly disclose the subject matter of claim 5, specifically the limitation “wherein after the step of embossing and prior to the step of depositing a solution of conductive or semiconductive material, the method further comprises the step of: treating the surface of the substrate with a surface modification process that has a different effect on depressed regions of the substrate relative to the non-depressed regions of the substrate whereby the non-depressed regions and the depressed regions are given different surface energies, such that the deposition of the material is defined by the surface energy of the substrate in the first and second regions.”

Ostergard

The Examiner looks to Ostergard at paragraphs 5, 6, 11, 13, 19, 44, 45 and 51; as well as claim 7, for a disclosure that “prior to the step of depositing a solution of conductive or semiconductive material,” the method further comprises the step of: “treating the surface of the substrate ” with a surface modification process that has “a different effect on regions of the substrate relative to other regions of the substrate whereby the regions and the other regions are given different surface energies, such that the deposition of the material is defined by the surface

energy of the substrate in the first and second regions " The Examiner notes that "the surface tension of the ink-jet droplet on the various regions will thus define the spreading of the droplet."

The Examiner alleges that it would have been obvious to have combined the "chemical barrier" technique mentioned in the "Background" section of Ostergard with the technique disclosed in Bernds, and that such a combination would arrive at the subject matter of existing claim 5.

Ostergard Teaches Away From Chemical Barriers

Firstly, Applicants respectfully submit that one skilled in the art would not find any incentive to combine Bernds with Ostergard because there is a strong teaching away from their combined use. Specifically, Applicants respectfully submit that Ostergard teaches away from the chemical barriers mentioned in the "Background" section of Ostergard and in favour of a pre-defined groove technique disclosed in the Summary and Detailed Description sections of Ostergard. In fact, section [0011] mentions the disadvantages of using chemical barriers or surface treatments, and teaches the preferred use of a pre-defined groove technique to avoid these disadvantages. Applicants respectfully submit that one skilled in the art reading Ostergard would be led away from employing chemical barrier techniques because of those clearly emphasized disadvantages. In other words, one skilled in the art, reading Ostergard, would not have found it obvious to modify the technique of Bernds on the basis of Ostergard in any way that is explicitly stated to be disadvantageous in Ostergard .

Claimed Technique Would Not Be Achieved

Secondly, Applicants respectfully submit that the combination of the chemical barrier techniques mentioned at the "Background" section of Ostergard and the technique of Bernds would not arrive at subject matter falling within the intended scope of amended claim 1. Amended claim 1 (and original claim 5 on which it is based) specifies "treating the surface of the substrate with a surface modification process that has a different effect on depressed regions of

the substrate relative to non-depressed regions of the substrate.” No such surface modification process is mentioned at the cited sections of the “Background” section of Ostergard.

Section 6 of the “Background” section of Ostergard mentions that chemical barriers have been formed by the deposition of ink-jet droplets. Applicants respectfully submit that this is a reference to a technique in which the positioning of an ink-jet head is used to control where a chemical barrier material is deposited. Section 6 of the “Background” section of Ostergard also mentions that chemical barriers have been formed by a lithography process. Applicants also submit that this is a reference to a technique in which a mask is used to control where a chemical barrier is deposited.

In contrast to such techniques, amended claim 1 specifies the use of the topography of the substrate itself to control which portions of the substrate are subject to a surface modification treatment.

Examples of such techniques are mentioned at page 6, line 7 to page 7, line 10 of the original PCT specification. The techniques mentioned there include: (1) bringing the substrate into contact with a flat stamp inked with a self-assembled monolayer, and (2) vacuum evaporation at an oblique angle to the substrate. Not one of these techniques or similar techniques are mentioned in the Background section of Ostergard. In other words, the prior art does not recognize the technology needed to accomplish the surface modification treatment needed for the present invention.

Additional Citations Are Not Relevant

For completeness, Applicants respectfully note that sections 5, 6, 11, 13, 19, 44, 51 of Ostergard, as referenced in the Office Action, are not relevant to the invention. As mentioned above, sections 5 and 6 are in the “Background” section of Ostergard and mention a chemical barrier technique as a technique that the invention of Ostergard aims to avoid. Moreover, these sections do not mention a surface modification process that has a different effect on depressed regions of the substrate relative to non-depressed regions.

Section 11 refers to using substrates with pre-defined grooves as an alternative to using chemical barriers, and section 11 further states that the technique of Ostergard is advantageous over the chemical barrier techniques mentioned in the “Background” section of Ostergard .

Sections 13 and 19 further refer to using groove pre-defined patterns for locating OTFT structural elements. There is no mention of using any chemical barrier technique, and in particular no mention of using a surface modification process that has a different effect on depressed regions of the substrate relative to non-depressed regions.

Sections 44 and 45 also refer to a specific example using a grooved pattern for locating the source and drain electrodes of a OTFT; there is no mention of using any chemical barrier technique, and in particular no mention of using a surface modification process that has a different effect on depressed regions of the substrate relative to non-depressed regions.

Section 51 also refers to pre-patterned grooves; there is no mention of using any chemical barrier technique, and in particular no mention of using a surface modification process that has a different effect on depressed regions of the substrate relative to non-depressed regions.

Clearly, on the basis of the teachings of Ostergard, as viewed by one skilled in the art, there is no reason to (and every reason not to) combine Bernd with Ostergard to even work toward the present invention.

Claims 24, 28, 32 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernds as applied to claim 30, and further in combination with Ong (20030164495). This rejection is traversed for at least the following reasons.

The Examiner admits that Bernds does not appear to explicitly disclose the features of claims 24, 28, 32 and 39. The Examiner looks to Ong for the missing features recited in the rejected claims. The Examiner also asserts that it would have been obvious to combine this disclosure of Ong with the disclosure of Bernds because it would facilitate the manufacture of the OFET of Bernds.

Applicants respectfully submit that the limitations from claim 5, which are missing from any of the cited references, are not found in Ong. Thus, on the basis of the allowability of amended claim 1, these dependent claims also would be patentable.

Claims 9, 10, 22, 23, 25, 29 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernds as applied to claim 27, and further in combination with Bulthaup (2003/0082485). rejection is traversed for at least the following reasons.

The Examiner admits that Bernds does not appear to explicitly disclose the features of claims 9, 10, 22, 23, 25, 29 and 33-35. The Examiner looks to Bulthaup for the missing features recited in the rejected claims, for example, the details in paragraphs 8, 30, 32-35 and 45 of the embossing "embossed" step.

Applicants respectfully submit that the limitations from claim 5, which are missing from any of the cited references, are not found in Bultharp. Thus, on the basis of the allowability of amended claim 1, these dependent claims also would be patentable.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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Respectfully submitted,

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Date: May 18, 2010